

A FEW REARRANGEMENTS IN THE TENEBRIONIDAE,  
WITH A KEY TO THE GENERA OF THE ULOMINI  
AND TENEBRIONINI OF AMERICA, NORTH OF MEXICO  
(COLEOPTERA)

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A few new changes in the Tenebrionidae are being published to make them available to Ross H. Arnett for the forthcoming fascicle on the Heteromera in his *Beetles of the United States (A Manual for Identification)*. In addition, I include previously published changes which were overlooked by authors or published after the Leng *Catalogue of the Coleoptera of America, north of Mexico*, and its supplements were completed. These changes are cited so the student using a key will not be mystified by an unfamiliar name, combination, or deletion.

Finally, completely new keys to the genera of the Ulomini and Tenebrionini are presented. The keys apply only to those specimens found in America, north of Mexico. Genera in many sections of the Tenebrionidae are not easily distinguished at sight, but the opposite is true in the two tribes mentioned. However, a student without access to a reference collection would have more than a little difficulty determining North American ulomine and tenebrionine genera using existing keys. The keys given below are not meant to be natural or to show phylogeny. They are merely my idea of the easiest method of quickly identifying genera by means of characteristics that do not depend on the subjective judgment of the identifier. One characteristic (couplet 5 of the ulomine key) might be unfamiliar: The distance from the ventral border of the eye to the cardo, which is the basal part of the maxilla. This distance is actually a way of measuring the ventral projection of the eye; the easiest method of expressing it is the mentioned distance. Incidentally, this characteristic should be investigated in genera of the Ulomini, for I have found it useful in determining some species of those genera.

ELEODINI, ELEODOPSINAE, AND ELEODOPSINI; ELEODES AND ELEODOPSIS

*Eleodopsis* was described as a new genus by Blaisdell (1939:52) for his new species *subvestita* (1939:53, pl. 4, figs. 8, 9, 14, 15). The species was based on 14 specimens collected on San Nicolas Island, one of the Channel Islands off the coast of southern California. Blaisdell stated that the facies of the species resembled that of *Eleodes (Blapyllis) inculta* LeConte, found on the Channel Islands of Santa Rosa and San Miguel. However, he erected the subfamily Eleodopsinae and tribe Eleodopsini for *Eleodopsis*.

Through the courtesy of Hugh B. Leech I have examined the holotype, allotype, and ten paratypes of *Eleodopsis subvestita* in the California Academy of Sciences. In the first place, the holotype label was attached to a female and the allotype label was attached to a male. But Blaisdell in

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his original description stated that the holotype is a male and the allotype is a female. I have, therefore, exchanged the labels on those two specimens to comply with Blaisdell's published designations.

Secondly, the pin holding the true male holotype also holds a small piece of cardboard on which is glued a non-eleodine male aedeagus (the basis of Blaisdell's figures 8 and 9), but the holotype still has within its abdomen a typically eleodine male aedeagus with clavae present and conspicuous. Now, one of the distinguishing characteristics of the Eleodini is the presence of clavae on the male genitalia. A pair of clavae, fingerlike processes, is attached ventrally, one on each side of the penis; when the penis is retracted the clavae lie parallel to the penis, but when the penis is extruded the clavae are at right angles to the axis of the penis. Because Blaisdell did not find clavae on what he supposed was the genitalia of *subvestita*, he erected the new subfamily, tribe, and genus. In addition, the pin holding a paratype holds a small piece of cardboard on which is glued the same type of non-eleodine male aedeagus as is pinned with the holotype, but that paratype is actually a female with female genitalia still inside the abdomen.

Thirdly, the pin holding the true female allotype also holds a small piece of cardboard on which is glued the female genitalia (the basis of Blaisdell's figures 14 and 15); the abdomen of that allotype has been emptied of all genitalic structures. The hemisternites of the illustrated genitalia do not have the lamina dorsalis and lamina ventrolateralis that are typical of eleodines. Nevertheless, Blaisdell stated in his original description that the female genitalia in question are typically eleodine. On the genitalia of two female paratypes I have found that laminae are indeed present and that these genitalia are distinctly different from those illustrated. I assume Blaisdell accidentally mixed the genitalic dissections of a non-eleodine beetle and *Eleodopsis subvestita*. Unfortunately I cannot state the genus and species from which the non-eleodine genitalia came, but I do think that some member of the Tentyrinae is involved. The most perplexing problem in this jumble is in the synonymies to be made. Should the scientific names be synonymized on the basis of the figured genitalia or on the basis of the whole specimen mounted above those genitalia? It seems to me that Blaisdell established his new higher taxons on the combination of genitalia and whole specimen. This was an erroneous combination, a composite. This situation is not discussed in the new International Code of Zoological Nomenclature. I have arbitrarily chosen to base the name *Eleodopsis subvestita* on the whole specimen, not on the illustrated genitalia.

Thus, I have arrived at the following conclusions: Eleodopsinae and Eleodopsini are junior synonyms of Eleodini, because of the presence of clavae; *Eleodopsis* is a junior synonym of the subgenus *Blapyllis*, because of the sexual dimorphism of the tarsi; and *subvestita* is a valid species, easily separated from *inculta* by the presence of yellowish setae, which are longest on the lateral portions of the pronotum and elytra. The synonymies developed above can be shown in the following manner:



Tribe: Eleodini Blaisdell, 1909

Synonym: Eleodopsinae Blaisdell, 1939 [NEW SYNONYMY]

Synonym: Eleodopsini Blaisdell, 1939 [NEW SYNONYMY]

Genus: *Eleodes* Eschscholtz, 1829

Subgenus: *Blapylis* Horn, 1870

Synonym: *Eleodopsis* Blaisdell, 1939 [NEW SYNONYMY]

#### PHRENAPATINI AND ULOMINI

Lacordaire established the family-group taxon Phrenapatini for the Neotropical genera *Phrenapates* and *Delognatha* and based the group almost exclusively on the large mandibles. Other genera which do not have large mandibles have since been added to the tribe; *Dioedus* and *Phthora*, which include species from the United States, are among these genera. Several attempts have been made to give differences between Phrenapatini and Ulomini, but only three characteristics seem to be constant for all genera of the tribes: In Phrenapatini the small scutellum, the absence of a scutellar stria, and the anteriorly parallel elytral striae; and in Ulomini the larger scutellum, the presence of a scutellar stria, and the anteriorly nonparallel elytral striae. Some authors synonymize these two tribes, others do not. For the present I prefer to keep them separate and to use the scutellar stria and scutellar size as key characteristics. The two North American genera in Phrenapatini are easily separated: In *Phthora* the antennal club has three segments, and in *Dioedus* the antennal club has two segments.

#### TRIBOLIUM AND APHANOTUS

*Aphanotus* LeConte, 1862 was made a junior synonym of *Tribolium* Macleay, 1825 by Hinton (1948:25). *Aphanotus* contained two species, *brevicornis* and *parallelus*, both from the United States.

#### TENEBRIONINI AND COELOMETOPINI

The American genera *Polopinus*, *Polypleurus*, *Rhinandrus*, *Centronopus*, *Scotobaenus*, *Cibdelis*, and *Coelocnemis*, with other American and Old World genera, are often grouped in the Coelometopini, separate from the Tenebrionini. The family-group taxon Coelometopini was proposed by Lacordaire in 1859. An analysis of Lacordaire's description or any subsequent descriptions shows only one difference between Coelometopini and Tenebrionini: In the former the wingless condition with the concomitant short metasternum and lack of elytral humeri, and in the latter the winged condition with the concomitant long metasternum and presence of elytral humeri. If genera are grouped into Coelometopini and Tenebrionini, such similar genera as *Rhinandrus* and *Zophobas* are kept apart and the species of *Centronopus* would have to be put into two different tribes! I prefer to group under Tenebrionini the seven genera mentioned in the first sentence. Some authors who have concerned themselves with the Tenebrionini have not used the category Coelometopini, and a few have

synonymized the tribes in print. *Coelometopus*, a palaeartic genus, and other coelometopines not mentioned herein should remain in Coelometopini until they are studied more fully; I expect that they, too, will eventually be included in Tenebrionini.

#### ZOPHOBAS, RHINANDRUS, AND ALOBATES

*Alobates subnitens* (Horn) 1874, originally described in *Nyctobates*, and *Rhinandrus sublaevis* Horn, 1885, are synonymous. Horn noted the resemblance, but he was misled by external sexual dimorphism. The former name was based on a female, having the anterior epistomal border truncate, and the latter on males, having the border strongly incised. All specimens used in the original descriptions came from Arizona.

The species *subnitens* cannot remain in *Alobates*. In *subnitens* the head is comparatively long, the epistoma is long and sexually dimorphic, the eye is large and prominent, the antenna has comparatively long segments, the mouthparts are comparatively long, the maxillary palpus has the ultimate segment broadened apically, the prosternal intercoxal process is narrow and arcuate, the mesosternum has a strong V-shaped depression, and the male genitalia have the paramere long and apically acuminate. *Alobates* has the opposites of all these characteristics.

Nor can *subnitens* be placed in *Rhinandrus*, even though the two agree in the above-mentioned characteristics. In *subnitens*, wings are present, and thus the metasternum is long, the scutellum is large, and the elytra are parallel-sided and have humeri. In *Rhinandrus* the wings are absent, the metasternum is short, the scutellum is small, and the elytra are elliptical and lack humeri. *Rhinandrus* must therefore be stricken from the list of United States genera; all species remaining in the genus occur either in or south of Mexico.

The genus *Zophobas* is the most logical place for *subnitens*. The two agree in all the above-mentioned characteristics. The species previously included in *Zophobas* are robust and heavily sclerotized and have the last visible sternum with a sulcus on the posterior border, whereas *subnitens* is more fragile and lacks the sulcus; I do not consider these two characteristics to be worthy of generic rank. Some other species of *Rhinandrus* will surely have to be moved to *Zophobas*. A look at the illustrations of some species of the former indicates such transfers should be made, but I do not have enough material at hand to do a complete study. The synonymy of *subnitens* as developed above can be shown as follows:

*Zophobas subnitens* (Horn). [NEW COMBINATION]

*Nyctobates subnitens* Horn, 1874.

*Rhinandrus sublaevis* Horn, 1885. [NEW SYNONYMY]

*Zophobas atratus* (Fabricius) 1775, not of authors, is synonymous with *Zophobas morio*, of authors, not Fabricius; the species occurs in the United States and much of the Neotropical Region. *Alobates morio* (Fabricius) 1776, not of authors, is synonymous with *Alobates barbata* (Knoch) 1801; the species occurs in the United States. These changes were made by Blair (1914:487).



## CENTRONOPUS, SCOTOBATES, AND SCOTOBAENUS

*Centronopus* Solier, 1848, is synonymous with *Scotobates* Horn, 1875; the genus contains two species from the United States, *calcaratus* and *opacus*. *Scotobaenus* LeConte, 1859, is synonymous with *Centronopus* of authors, not Solier; the genus contains four species from the United States, *parallelus*, *wagneri*, *punctatus*, and *simplex*. These changes were made by Spilman (1962:1-5).

## TENEBRIO AND NEATUS

*Neatus* LeConte, 1862, has usually been considered a synonym or subgenus of *Tenebrio* Linnaeus, 1758. Reitter (1920:22) again established the distinction between the two genera, and at the same time he separated the nearctic species *N. tenebrioides* from the palaeartic species *N. picipes*.

## ADELONIA, MEROTEMNUS, AND RHACIUS

*Adelonia* Laporte, 1840, is a senior synonym of *Merotemnus* Horn, 1870 (formerly in the Ulomini), and *Rhacius* Champion, 1885 (always in the Tenebrionini); *Adelonia* is in the Tenebrionini. These changes were made by Spilman (1961:50). *Adelonia* contains two species from the United States, *filiformis* and *sulcatula*.

## KEY TO THE GENERA OF ULOMINI OF AMERICA, NORTH OF MEXICO

1. Elytral intervals finely carinate-----TRIBOLIUM  
Elytral intervals flat or convex, or with a weak carina on eighth interval only ----- 2
2. Elytral pseudopleuron gradually tapering posteriorly, attaining elytral apex----- 3  
Elytral pseudopleuron abruptly ending well before elytral apex----- 10
3. Antenna capitate -----LYPHIA  
Antenna clavate ----- 4
4. Pronotum with dorsal surface having punctures of two distinct sizes----- 5  
Pronotum with dorsal surface having punctures of one size----- 6
5. Pronotum with dorsal surface having larger punctures laterally only; distance from eye to cardo subequal to width of last antennal segment----- MYCOTROGUS  
Pronotum with dorsal surface having larger punctures medially only or scattered over whole surface; distance from eye to cardo distinctly less than width of last antennal segment ----- ULOSONIA
6. Eye not emarginate anteriorly ----- PALORUS  
Eye emarginate anteriorly ----- 7
7. Epistoma in dorsal view with anterior border emarginate ----- 8  
Epistoma in dorsal view with anterior border not emarginate ----- 9
8. Pronotum in dorsal view with posterior border bisinuate; mesosternum with deep, distinct V-shaped depression -----ALPHITOBIUS  
Pronotum in dorsal view with posterior border convex; mesosternum without deep depression, merely weakly declivous-----LATHETICUS
9. Metasternum short, distance between mesocoxa and metacoxa less than width of metacoxa; elytral apex rounded----- EUTOCHIA  
Metasternum long, distance between mesocoxa and metacoxa greater than width of metacoxa; elytral apex truncate-----CORTICEUS
10. Elytra with eighth interval having a weak carina----- DOLIEMA  
Elytra with all intervals flat or convex----- 11
11. Protibia strongly expanded apically and very strongly serrate dorsally----- ULOMA  
Protibia slender, at most weakly expanded apically, smooth dorsally----- 12
12. Metatarsus with segment 1 long, equal to or longer than combined lengths of segments 2 and 3----- 13

- Metatarsus with segment 1 short, much shorter than combined lengths of segments 2 and 3 ----- **THARSUS**
13. Pronotum in dorsal view with posterior border evenly convex; epistoma in dorsal view with anterior border straight or convex ----- **GNATHOCERUS**
- Pronotum in dorsal view with posterior border bisinuate; epistoma in dorsal view with anterior border emarginate or concave ----- 14
14. Antennal segments 2 and 4 subequal in length ----- **SITOPHAGUS**
- Antennal segment 4 almost twice as long as segment 2 ----- **CYNAEUS**

### KEY TO THE GENERA OF TENEBRIONINI OF AMERICA, NORTH OF MEXICO

1. Eye completely divided ----- **IDIOBATES**
- Eyes not divided ----- 2
2. Abdomen with visible membrane between 3rd, 4th, and 5th visible sterna ----- 3
- Abdomen without visible membrane between sterna ----- 20
3. Tarsi with fine, hairy setae ventrally ----- 4
- Tarsi with coarse, spinous setae ventrally ----- 19
4. Head above eye with deep sulcus extending distinctly posterior to eye ----- **GLYPTOTUS**
- Head above eye with or without sulcus, if present, sulcus not extending posterior to eye ----- 5
5. Antenna with last segment rounded apically ----- 6
- Antenna with last segment asymmetrically angulate apically ----- 9
6. Metasternum short, medial length much less than medial length of prosternum including intercoxal process; elytral pseudopleuron as broad at apex as at first visible abdominal sternum ----- 7
- Metasternum long, medial length much more than medial length of prosternum including intercoxal process; elytral pseudopleuron much narrower at apex than at first visible abdominal sternum ----- 8
7. Elytra with alternate intervals costate; antenna with last segment wider than long ----- **POLYPLEURUS**
- Elytra with intervals flat or convex; antenna with last segment longer than wide ----- **POLOPINUS**
8. Eye short, length of dorsal lobe obviously less than width of last antennal segment ----- **IPHTHIMUS**
- Eye longer, length of dorsal lobe obviously greater than width of last antennal segment ----- **ALOBATES**
9. Epistoma with anterior border obviously thickened ----- **CENTRONOPUS**
- Epistoma with anterior border not thickened ----- 10
10. Metasternum short, distance between mesocoxa and metacoxa equal to or less than width of mesocoxa ----- 11
- Metasternum long, distance between mesocoxa and metacoxa much greater than width of mesocoxa ----- 13
11. Elytral intervals tuberculate or mucronate ----- **CIBDELIS**
- Elytral intervals not tuberculate or mucronate ----- 12
12. Tibiae with two distinct rows of very dense, fine setae on ventral surface of apical half; elytral pseudopleuron gradually narrowing posteriorly ----- **COELOCNEMIS**
- Tibiae with confused setae on ventral surface of apical half; elytral pseudopleuron abruptly narrowing at base of last visible sternum, then becoming linear toward apex ----- **SCOTOBAENUS**
13. Abdomen with last visible sternum having marginal sulcus posteriorly ----- 14
- Abdomen with last visible sternum not having marginal sulcus posteriorly ----- 15
14. Pronotum with dorsal surface very sparsely punctate, punctures separated by more than their diameters ----- **ZOPHOBAS ATRATUS**
- Pronotum with dorsal surface very densely punctate, punctures separated by their diameters or less ----- **XYLOPINUS SAPERDOIDES**
15. Elytra not striate, but with confused depressions and sulci ----- **UPIS**
- Elytra striate ----- 16
16. Epistoma in dorsal view with anterior border emarginate ----- 17
- Epistoma in dorsal view with anterior border not emarginate ----- 18
17. Pronotum with dorsal surface having minute punctures which are much smaller than punctures of elytral striae; elytral striae not sulcate ----- **ZOPHOBAS SUBNITENS**
- Pronotum with dorsal surface having coarse punctures which are as large as punctures of elytral striae; elytral striae sulcate ----- **XYLOPINUS AENESCENS**



18. Eye with dorsal lobe larger than ventral lobe; femora clavate-----MERINUS  
 Eye with dorsal and ventral lobes of equal size; femora of approximately equal  
 thickness throughout their length-----HAPLANDRUS
19. Pronotum with dorsal surface having punctures of two sizes, large laterally and  
 small overall; abdomen with last visible sternum having marginal sulcus pos-  
 teriorly -----NEATUS  
 Pronotum with dorsal surface having punctures of only one size; abdomen with  
 last visible sternum not having marginal sulcus posteriorly-----TENEBRIO
20. Antenna with last segment rounded apically----- 21  
 Antenna with last segment acuminate apically----- 22
21. Elytra striate; metafemur with strong ventral tooth apically-----ADELONIA  
 Elytra not striate but with confused punctures; metafemur without tooth ----- BIUS
22. Epistoma with anterior and lateral borders strongly reflexed; pronotum with angula-  
 tion between dorsum and hypomeron acute-----ALAEPHUS  
 Epistoma with anterior border not reflexed and lateral border only weakly reflexed;  
 pronotum with angulation between dorsum and hypomeron obtuse or rounded -  
 -----EUPSOPHULUS

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### NEWS

The U. S. National Museum and U. S. Department of Agriculture insect taxonomists, staffs, and collections, including the Casey Collection, which were situated in the Natural History Building of the Smithsonian Institution in Washington have been moved to a building at 701 Lamont Street, N.W. However, the mailing address remains the same as before: Division of Insects, U. S. National Museum, Washington 25, D. C.

I would leave the well-paved highway of my purposeful intentions and wind up under shadowy ferns among mystical beetle tracks.—Alexander King